Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

THE KANSAS MINERAL EXHIBIT AT ST. LOUIS.

By G. P. GRIMSLEY, Assistant State Geologist, Morgantown, W. Va.

Read before the Academy, at Topeka, December 31, 1904.

THE chief of the mining department of the Louisiana Purchase Exposition insisted from the beginning of the work of preparation that the mineral exhibits should have an educational value, and that it should be an exhibit of processes, as far as possible. It was hoped that the exhibits of states and foreign countries would not be wholly of the nature of mineral curiosities and unique specimens, but should be practical, so that here in the compass of a single building the people might see the steps in manufacture, from the crude ores up to the finished product adapted to its various uses.

PLAN OF ARRANGEMENT.

Realizing the value of this wise plan, the Kansas exhibit was planned and erected with these ends in view. That we succeeded in approximating this ideal of arrangement is proved by the many favorable comments made by the visitors from other states and countries and by the awards given us by impartial juries.

Several months before the fair opened we made detailed plans for the Kansas mineral exhibit and submitted them to the mines department. These plans called for a space of 3000 square feet, and were later adapted to 2000 square feet, which we felt sure would be awarded to us. The demand for space was so great that the chief of the mines department, though expressing his deep interest in our display and his satisfaction with our plans, was compelled to cut our allotment of space to 1588 square feet. This space was in the form of a rectangle fifty-nine feet long and twenty-seven feet wide, situated in block 51, in the southeastern section of the building. We had for our neighbors on either side Nebraska and Oklahoma, with Wyoming back of us and Montana in front, across the aisle.

This space was enclosed by building a partition fifty-nine feet long and twelve feet high at the back of the booth. This partition was covered with green fire-proof burlap, and it was used for a large display of pictures, maps and charts of the Kansas mineral industries. The maps on a large scale, three in number, showed in colors the geology of the state, the mineral belts of the eastern third of the state, giving the location of the oil and gas territory, the lead and zinc area, and the important coal areas. A third map showed vertical sections of the rocks of the state, a log of one of the gas-wells, and a section of the Lyons rock-salt shaft. Photographs of the zinc smelters and mines, coal-mines, brick plants, oil- and gas-wells, etc., were exhibited in neat frames, covered with glass made in Kansas factories. The charts gave the production of oil, from the first year to 1904, the number of wells, statistics of the different mineral products, purity of Kansas gas compared with that from other states, which showed the Kansas article equal and in a few cases superior to that of Eastern states.

Oklahoma on one side of our space having large fields of gypsum, it seemed fitting to make the dividing wall of blocks of gypsum from our own quarries. This wall was built thirty inches high in a checker work of gypsum stone blocks two feet long, one foot wide, and ten inches thick, the material coming from the Great Western Plaster Company mines, at Blue Rapids. The Nebraska exhibit, on the other side, was separated by a line of show-cases.

GYPSUM INDUSTRY.

Since Kansas held first rank for many years in the gypsum industry and to-day has large developed fields of this important building material, the prominent aisle front of the Kansas exhibit was made in a gypsum facade, as shown in plates XXI and XXII. The plaster came from Blue Rapids, and was modeled into an open balustrade, surmounted at the corners with plaster urns. The central approach was an arch eighteen feet high, supported by fluted columns and capped by a large seal of state, with the word "Kansas" in raised gold letters on the cornice. This brought prominently into view one of our prominent industries and made an artistic and imposing approach to the exhibits. The facade was broken by two other open doors four feet wide.

In order that there could be no trouble in identifying our exhibits, we had the word "Kansas" prominent in all corners and places on printed signs, and a large eight-foot sign suspended above was visible from all parts of the building, showing the people that Kansas was here.

The gypsum products were also shown in the crude material and in the finished products by the United States Gypsum Company, which took the interest to build an attractive exhibit in one corner of our space. They showed polished blocks of gypsum from their various Kansas mines, the white and colored finishing plasters, small pyramids covered with different kinds of plaster, and ornaments molded out of plaster. Another very instructive exhibit was erected by the J. B. Ehrsam Machine Company, of Enterprise, Kan. This consisted of two gypsum calcining kettles for the manufacture of gypsum plaster, made one twenty-fifth natural size and enclosed in brick-work, showing the arrangement of the flues and drafts, method of stirring the plaster, fire arches, vapor- and smoke-stacks. This exhibit, enclosed by a brass rail, made one of the most instructive exhibits in the building, because the beauty of the architecture and sculpture of the entire fair was wrought in plaster made from gypsum rock. Here in the Kansas space was the only exhibit on the fair-grounds which showed how the marble halls, sculptured urn and statue were made possible; how the soft, white gypsum rock could be converted by heat in properly constructed kettles into plaster for this temporary city of palaces. It was fitting that the Kansas display should include such an exhibit, since a large percentage of the material for these buildings came from Kansas. This was, perhaps, for the reasons given above, one of the most valuable displays in the Kansas space, and while it was a very expensive exhibit, it was well worth the cost, and the expense was met by the Ehrsam company, which deserves the appreciation of the state for their interest in our display.

OIL.

When the great fair was held in Chicago, and Kansas came to the front with good displays, there was one mineral industry which belonged to the lesser products, and no one dreamed that by the time of the next great exposition this small industry would be attracting the attention of the world. The developed oil-fields of Kansas at that day, and even two years ago, were small, but to-day the oil men of the country are looking to Kansas for the future supply.

Realizing the great importance of this industry, it was hoped that we could make our greatest exhibit that of oil. In this we were disappointed; vain efforts were made time and time again to interest the oil companies in making the finest oil exhibit at St. Louis. The golden opportunity was ours, and with our rapidly growing fields we should have made easily a gold-medal exhibit. Our oil companies were too busy drilling new wells to stop and take an interest in a St. Louis oil exhibit. It was a great loss to our fine exhibit and to our oil centers not to have an exhibit commensurate with our oil resources. Yet, with this drawback, Kansas had an oil exhibit which attracted more attention than any other in the building excepting that of the Standard Oil Company.

The oil exhibit consisted of ornamental glass jars filled with samples of crude oils from the different fields arranged in a pyramid, surmounted by a large pitcher of oil. Samples of oil- and gas-well sands were placed with the samples of oil. In this exhibit the following localities were represented: Humboldt, Chanute, Neodesha, Thayer, Cherryvale, Peru, Buffalo, Coffeyville, La Harpe, Independence, Longton, Le Roy, Erie.

A pamphlet describing the history of the oil-fields, the origin and description of the different areas was distributed in connection with this exhibit. The Commercial Club of Chanute, late in the summer, made a special exhibit of crude oils and photographs of the wells.

LEAD AND ZINC.

Kansas at the present time holds first rank in the production of metallic zinc, or spelter. The producing area of lead and zinc is not large, and is found around Galena, in Cherokee county. The lead is smelted at Galena by the Galena Smelting and Manufacturing Company, which made an exhibit of pigs of lead piled up in a pyramid containing one and one-half tons. The fumes and dust from this smelter are caught in large cylinders and then fused in a furnace, giving a variety of lead known as "lead smoke." This "smoke" has a prismatic structure, and the process of its manufacture at this plant is superior to any other used. The exhibit of this material in the Kansas space attracted attention on account of its value and peculiar appearance, as well as from its name of "lead smoke."

The metallic zinc was shown in our exhibit by fifty-pound plates of spelter loaned by the Granby Mining and Smelting Company from their smelter at Neodesha. The main metallic zinc exhibit from Kansas was made by the Lanyon Zinc Company, from its works at Iola, Gas City, and Lanyonville, in a separate space of 2000 square feet under their own name and control. This exhibit showed all the varied uses of metallic zinc—for rods, roof-tile, wash-boards, stair work, inside metallic finish, etc. This booth had the name "Kansas" prominent; and while in no way connected with the state display, it was still an advertisement of the Kansas resources, and was so intended by the company. Mr. Drake, president of this company, took great interest in our work and tried to secure space near us, so as to bring these displays together. This exhibit received the grand prize.

On the Kansas space a pyramid was constructed of choice lead and zinc ores, with plates of metallic zinc at the base, and the whole capped by an eagle and ball made of the sheet zinc. This pyramid thus showed in one column the ores, the metal, and the metal rolled into sheet zinc worked over into a patriotic emblem. Some of the finest cubes of zinc in the building were in our exhibit. Two show-cases were filled with choice specimens of lead and zinc ores from Galena. A pyramid case was filled with zinc silicate ores and lead and zinc sulfide ores. There was one mass of lead crystals weighing 700 pounds and another weighing 300 pounds, both from Galena, and the former, known as the Carney specimen, received a special award.

The ornamental minerals associated with the lead and zinc in the mines, celebrated for their beauty rather than for their utility, were exhibited in two cases. These consisted of the golden lime or calcite crystals, the rarer and more choice crystals of ruby zinc, and yellow, cadmium-coated crystals. These made a brilliant and beautiful display, and were loaned from the Cooper collection, of Washburn College, at Topeka. This collection attracted much attention from visitors and was a source of surprise to many, who did not know before that crystals of such beauty could be found in mines of lead and zinc.

The Kansas lead and zinc display in its own space, combined with the Lanyon exhibit, was one of the features of the mines building.

COAL.

Coal was shown in the central space of the exhibit, in the form of a symmetrical pyramid eight feet square at the base and fourteen feet high, containing some sixteen tons of coal from Frontenac, mined and erected at St. Louis by the Mt. Carmel Coal Company without any cost to the state. This coal pyramid was one of the massive displays, and one of the conspicuous exhibits in a group of coal columns and pyramids from the various states in this part of the building, which was sometimes designated as the coal-mines of the fair. With all these coal exhibits, some of which secured the grand prize, Kansas people had no cause to feel ashamed of their coal pyramid.

This coal shows by analysis the following composition:

Moisture	1.14	per cent.
Volatile matter	64.71	"
Fixed carbon	24.26	"
Ash	6.59	"
Sulfur	3.30	"

COKE.

The coke made from Kansas coal was shown in a small exhibit from the Eastern Coal and Coke Company, from their ovens at Cokedale. The Standard Oil Company gave the state much valuable assistance in the collection of the crude oils from the different fields, and also made an exhibit of coke made from the residue from the oil in the course of refining at the Neodesha refinery. This fairly compact coke made in this interesting way was the only oil coke exhibited and, being a new and but little-known product, attracted much attention.

SALT.

Kansas holds third rank in salt production; so one of the prominent displays made by Kansas was that of salt. The rock salt from the Lyons shaft was shown in a massive display by the Western Rock-salt Company. This exhibit consisted of three heavy blocks, the largest shown in the building. This display interested the government experts, and, at their urgent request, was given to them for a permanent exhibit at the new Washington museum. In addition, this company exhibited jars of the different grades of salt, and a collection of very clear, pure crystals, ranging in size from a half-inch to several feet across. There are only six rock-salt mines in this country, and three of these are found in Kansas. The only rock-salt exhibit that compared with Kansas was that of Louisiana.

The solar evaporated salt and brine used by the Solomon Salt Company were exhibited. These were from the oldest salt-works in the state, and the only one that uses the direct heat of the sun to evaporate the brine. The salt from brines evaporated by artificial heat filled two large show-cases, one from the Sterling Salt Company and the other from the Hutchinson-Kansas Salt Company. These exhibits consisted of packages of table salt piled several courses high, and the spaces between filled in with small sample packages. Both the table and dairy salts were shown. The high character of these pure-white table salts was apparent in open dishes, and proved a valuable advertisement for the companies and for the state.

MINERAL WATERS.

Mineral waters were shown from the Phillips well, at Topeka, and a large case filled with bottles of the famous Abilena natural cathartic water gave the public a good idea of the health-giving qualities of Kansas waters. The Abilena water became a well-known brand at St. Louis. The water from these springs at Abilene contains the following ingredients, in grains, per United States gallon:

Sodium bicarbonate	8.909
Lime bicarbonate	10.7333
Iron bicarbonate	0.917
Sodium nitrate	0.568
Sodium sulfate	3229.288
Magnesium sulfate	71.966
Lime sulfate	44.966
Sodium chloride (common salt)	65.176
Silica	0.293
Ammonia	No trace.
Total solids	3432.195

It is without doubt the best natural cathartic mineral water in the country. In another part of the building, the United States Geological Survey had a mineral-water exhibit, and in this exhibit were mineral waters from the Waconda and other mineral springs of Kansas.

BLUE VITRIOL AND CEMENT.

Another show-case contained the blue-vitriol exhibit from the old Argentine smelter. This represents one of the lost arts of Kansas. This company supplied over half the vitriol used by the Western

Union Telegraph Company, and was prepared to ship vitriol on a larger scale and of the highest quality, but the consolidation of the smelter interests of the country resulted in the closing down of the Argentine smelter with its interesting by-product of vitriol.

In the upper part of the case, the Iola Portland Cement Company had a small exhibit, showing the materials from which the cement was made, the finished cement, the briquettes of cement broken, to show the high tensile strength. This was only a small exhibit, as the main exhibit was made in the cement building outside, in the mining gulch. The cement industry has developed very rapidly in the past few years in Kansas, and it was a source of regret that we could not persuade the companies to make a united exhibit in the Kansas space. Elaborate plans had been made with this end in view, but they failed to materialize at the last moment.

BUILDING STONE.

Kansas building stone was shown in eight- and ten-inch cubes from the quarries of the state. Very few quarries were willing to contribute to this exhibit; so we collected the stone and had it cut at the expense of the state. From a number of the quarries we had the stone donated and even cut into the desired form. This stone exhibit, while incomplete, was large enough to attract attention. The blocks were arranged on white enameled supports, set on a sloping series of shelves five feet in height and ten feet in length. The top shelf contained ornamental jars of white silica or tripoli from Burr Oak, and concentrates of lead and zinc. The sandstone and limestone blocks of different colors were exhibited from the following quarries:

Americus.
Atchison.
Blue Rapids.
Caldwell.
Cherryvale.
Coffeyville.
Cottonwood Falls.
Ellis chalk.
Ellis limestone.
Florena.
Frankfort.
Fort Scott cement rock.
Fort Scott limestone.
Fort Scott sandstone.
Galena.
Great Bend.
Greeley.
Hays City.
Holton.
Iola.
Jefferson county.
Junction City.
Leavenworth.
Lecompton.
Lyndon.
Manhattan.
Neodesha.
Norton.
Oswego.
Ottawa.
Russell.
Salina.
Sedan.
Topeka.
Wilson.
Winfield.

GLASS.

Our great glass industry was brought to the attention of visitors by a fine exhibit of table glassware from the Cherryvale Glass Company, bottles from the Coffeyville Bottle Glass Company, and the crude materials for glass manufacture from within the state's limits. There was an exhibit of the glass sand from Fredonia, contributed by Long

Brothers Real Estate Company; soda ash and lime from the New Jersey United Zinc and Chemical Company, whose works are located at Argentine, Kan. The state has not only the large glass factories, located at Coffeyville, Cherryvale, Independence, Caney, etc., but all the materials necessary for this work within the state.

CLAY PRODUCTS.

Over a large area of the state of Kansas the clay shales form a characteristic and thick formation. In the past ten years these have been utilized in brick manufacture to a very considerable extent. The brick industry is now prominent in the state, and at St. Louis the brick and the shales were exhibited from the various brick-yards of the state on a long pyramidal table. On one side were shown the brick burned with coal fuel, and on the other side the brick burned with natural-gas fuel. On account of the high quality of both grades, the exhibit attracted much attention from brick manufacturers and from the general public. The exhibit was thus carefully studied to try and determine whether gas- or coal-burned brick were better. Many compliments were given on the quality of the Kansas paving-brick in this exhibit.

Samples of the brick were taken by the representative of the War Department, at Washington, to be tested at the United States arsenal at Watertown, Mass., but these results will not be available for some months. The brick for the Kansas exhibit were contributed by the following firms:

Atchison Vitrified Brick Company.
Capital City Vitrified Brick Company, Topeka.
Caney Brick Company.
Cherryvale Brick Company.
Clay Center Brick Company.
Coffeyville Vitrified Brick and Tile Company; plants at Chanute, Cherryvale, Coffeyville, and Independence.
Columbus Brick Company.
Federal Betterment Brick Company.
Fredonia Brick Company.
Fort Scott Vitrified Paving-brick Company.
Humboldt Vitrified Brick Company.
La Harpe Brick Company.
Lawrence Vitrified Paving-brick Company.
Missouri Valley Brick Company, Leavenworth.
Neodesha Brick Company.
Ottawa Brick Company.
Paola Brick Company.
Pittsburg Paving-brick Company, Sycamore plant.
Salina Brick Company.

The Coffeyville Vitrified Paving-brick and Tile Company made a special exhibit of their ornamental hand-molded brick in a mantel

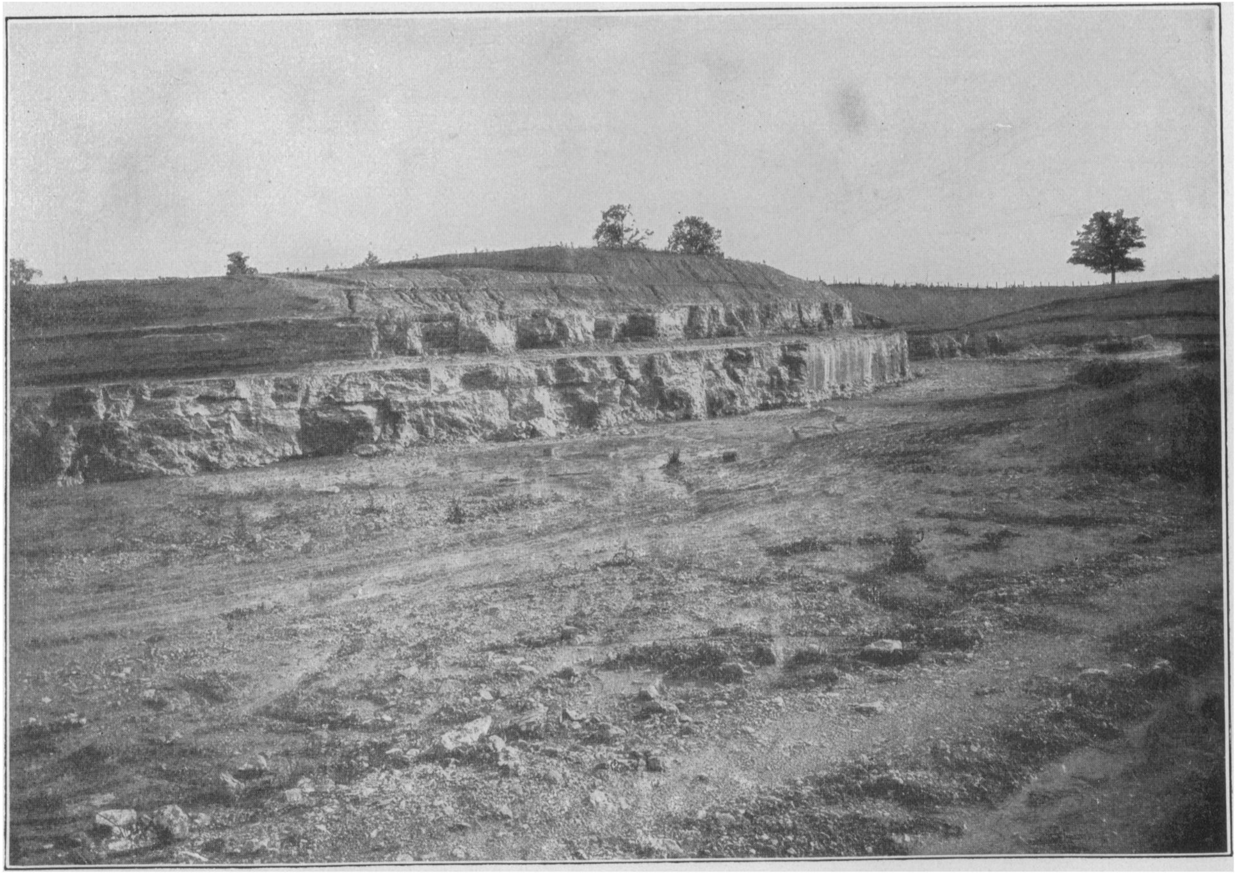

Plate XIV.—Alabastine Plaster Company's Gypsum Quarry, near Grand Rapids, Mich.
(Upper gypsum ledge, six feet; lower ledge, twelve feet. Seventeen feet of shale forms the cover.)

eight feet wide and ten and one-half feet high. In this mantel were placed their various types of red and buff brick, making an artistic exhibit, which was said by experts to be the finest mantel erected at the fair. This exhibit was made by the company at their own expense.

The new Coffeyville Roofing-tile Factory made an exhibit of roofing-tile, with a picture of their plant placed above it. In color, finish and strength these tile had no superior in this building. This industry was started after the fair opened and is building up a large business.

CONCLUSION.

Kansas, through her mining exhibits, established a reputation as a mineral state in the minds of the visitors from home and abroad. The question, "What has Kansas to show in mineral lines?" was answered by this display. This phase of the state's resources is one not as well known nor as well advertised as it should be, and the results of this complete advertisement of the mineral resources is bound to bring rich returns in the future.

It certainly will repay the state for its money expenditure, the commission for its time and anxiety involved in its preparation and installation, and the people of the state who have aided in the collection of the materials.

At the close of this great exposition our exhibit of the Kansas mineral products was appreciated so highly that it was sought after by some of the leading museums of the country. The National Museum, at Washington, wished to take it entire and set it up in the new government museum. Some of these demands, with the honor involved, were hard to refuse, but it seemed best to the chief of this department and to the commission that this collection, so nearly complete, and collected at the expense of the state, ought to be preserved at home as a permanent memorial of the exposition and as a standing advertisement of our mineral wealth. It was deemed best to send it to Topeka, to be set up in the museum room of the Kansas Academy of Science, in the state-house, open to public inspection. Thus in one room the stranger and citizen can see what Kansas has in mineral wealth. It will there prove an educational force, and will be worth more than its money value to the state. The exhibit is now installed in Topeka, in the Academy of Science museum, open to the public.

This exhibit received two gold medals, twenty-two silver medals, and fourteen bronze medals.